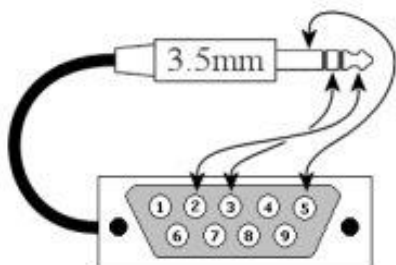# Oppo RS-232

User Manual

The OPPO BDP-80 and 83 Blu-ray Disc Player can be upgraded with an after market RS-232 option for wired remote control. The RS-232 port is configured as a DCE device using a female RCA stereo jack type connector.

RS-232 Pin Configuration:

The pin out of the RS-232 port is as the following:

This pin configuration allows a PC running a serial terminal program (such as Hyper Terminal) to communicate with the player using a RCA stereo jack to RS-232 serial cable. For connection to a remote control system, please refer to the documentation that comes with the remote control system.

Communication Settings:
The RS-232 control port of the OPPO BDP-80 uses the following communications settings:
Baud Rate: 9600
Data Bits: 8
Parity: None
Stop Bit: 1
Flow Control: None

Command Structure:
Each command starts with a # sign (ASCII 0x23), followed by a 3-character command code. If there are any parameters for the command, the parameters are given in text format, separated by a space (ASCII 0x20) from the command code. The # character (ASCII 0x23) must never appear in the parameters. A carriage return (ASCII 0x0d) indicates the end of the command. Each command must not exceed 25 bytes including the start of command and end of command bytes.

The illustration of the command structure is as the followings:
<Command> = <Start of Command><Command Code>[<sp><Parameters>]
<End of Command>
<Start of Command> = #, ASCII 0x23
<Command Code> = <byte><byte><byte>
<sp> = space, ASCII 0x20
<Parameters> = command-specific
<End of Command> = CR, ASCII 0x0d

Response Structure:
Upon receiving a command, the player shall try to execute the command and send back a response. The response starts with an "@" sign (ASCII 0x23), followed by a result code, either "OK" or "ER". If there are any parameters or additional message, the parameters or message is given in text format, separated by a space (ASCII 0x20) from the result code. The @ character (ASCII 0x40) must never appear in the parameters or message. A carriage return (ASCII 0x0d) indicates the end of response. Each response must not exceed 25 bytes including the start of response and the end of response bytes.

The illustration of the response structure is as the followings:
<Response> = <Start of Response><Result Code>[<sp><Parameters>]
<End of Response>
<Start of Response> = @, ASCII 0x40
<Result Code> = OK|ER
<sp> = space, ASCII 0x20
<Parameters> = command-specific
<End of Response> = CR, ASCII 0x0d

Command Sequence:
Commands are executed in the order they are received. The host should wait for a response from the player before sending the next command. If the player receives a new command before executing the previous command, the player may discard the previous command. If the host does not receive a response from the player 10 seconds after the command is issued, the host may consider the command or response lost during transmission, and can retransmit the command.

Command List:
      A. Command that maps to a remote control button

This group of commands maps directly to the infrared remote control keys. No parameters are needed for these commands. The player handles the commands as if it receives the same IR remote commands. For actions that require multiple key sequence, such as go to a certain chapter (GOT command followed by multiple numeric key commands and the SEL command), the player responds to each command individually until the last command is received. At that time the player shall respond with either OK or ER depending on the result of the action.

A. Command that maps to a remote control button

Command Code	Remote Key	Function	Special Response
POW	POWER	Toggle power STANDBY and ON	OK ON OK OFF
SRC	SOURCE	Go to Home Menu to select media source	
EJT	OPEN	Open/close the disc tray	OK OPEN OK CLOSE
PON	ON	Discrete on	OK ON
POF	OFF	Discrete off	OK OFF
SYS	P/N	Switch output TV system: NSTC, PAL or MULTI(AUTO)	OK NTSC OK PAL OK AUTO
DIM	DIMMER	Dim front panel display	OK ON OK DIM OK OFF
PUR	PURE AUDIO	Pure audio mode (no video)	OK ON OK OFF
VUP	VOL +	Increase volume	OK n (n is the volume number, 0 – 100)
VDN	VOL -	Decrease volume	OK n (n is the volume number, 0 – 100)
MUT	MUTE	Mute audio	OK MUTE OK UNMUTE
NU1	1	Numeric key 1	
NU2	2	Numeric key 2	
NU3	3	Numeric key 3	
NU4	4	Numeric key 4	
NU5	5	Numeric key 5	
NU6	6	Numeric key 6	
NU7	7	Numeric key 7	
NU8	8	Numeric key 8	
NU9	9	Numeric key 9	
NU0	0	Numeric key 0	
CLR	CLEAR	Clear numeric input	
GOT	GOTO	Play from a specified location	
HOM	HOME	Go to Home Menu to select media source	
PUP	PAGE UP	Show previous page	
PDN	PAGE DOWN	Show next page	
OSD	DISPLAY	Show/hide on-screen display	
TTL	TOP MENU	Show BD top menu or DVD title menu	
MNU	POP-UP MENU	Show BD pop-up menu or DVD menu	
NUP	Up Arrow	Navigation	
NLT	Left Arrow	Navigation	
NRT	Right Arrow	Navigation	

NDN	Down Arrow	Navigation	
SEL	ENTER	Navigation	
SET	SETUP	Enter the player setup menu	
RET	RETURN	Return to the previous menu or mode	
RED	RED	Function varies by content	
GRN	GREEN	Function varies by content	
BLU	BLUE	Function varies by content	
YLW	YELLOW	Function varies by content	
STP	STOP	Stop playback	
PLA	PLAY	Start playback	
PAU	PAUSE	Pause playback	
PRE	PREV	Skip to previous	
REV	REV	Fast reverse play	OK 1 X OK 2 X OK 3 X OK 4 X OK 5 X
FWD	FWD	Fast forward play	Same as above
NXT	NEXT	Skip to next	
AUD	AUDIO	Change audio language or channel	OK (audio track information)
SUB	SUBTITLE	Change subtitle language	OK (subtitle information)
ANG	ANGLE	Change camera angle	OK (angle information)
ZOM	ZOOM	Zoom in/out and adjust aspect ratio	OK (zoom ratio)
SAP	SAP	Turn on/off Secondary Audio Program	OK (audio track information) OK OFF
ATB	AB REPLAY	Repeat play the selected section	OK A- OK A-B OK OFF
RPT	REPEAT	Repeat play	OK Repeat Chapter OK Repeat Title OK OFF
PIP	PIP	Show/hide Picture-in-Picture	
HDM	RESOLUTION	Switch output resolution	

B. Query Commands

This group of commands issues queries to the player. The player shall respond according to its current status.

Command Code	Function	Response Example
QPW	Query power status	OK ON OK OFF
QVR	Query firmware version	OK BDP83-14-0306
QVL	Query volume	OK 100 OK MUTE
QHD	Query HDMI resolution	OK 480P OK 720P50 OK 1080P60
QPL	Query playback status	OK NO DISC OK LOADING OK OPEN OK CLOSE OK PLAY OK PAUSE OK STOP OK STEP OK FREV OK FFWD OK SFWD OK SREV OK SETUP OK HOME MENU OK MEDIA CENTER
QTK	Query Track/Title	OK 2/10
QCH	Query Chapter	OK 3/3
QTE	Query Track/Title elapsed time	OK 0:1:34
QTR	Query Track/Title remaining time	OK 1:20:23
QCE	Query Chapter elapsed time	OK 0:1:34
QCR	Query Chapter remaining time	OK 0:12:22
QEL	Query Total elapsed time	OK 0:5:12
QRE	Query Total remaining time	OK 1:34:44
QDT	Query disc type	OK BD-MV OK DVD-VIDEO OK DVD-AUDIO OK SACD OK CDDA OK HDCD OK DATA-DISC
QAT	Query audio type	OK DD 1/1 OK DD 1/5 English OK DTS 2/5 English OK LPCM OK DTS-HD 1/4 English
QST	Query subtitle type	OK OFF OK 1/1 English

C. Advanced Commands
This group of commands instructs the player to perform an action in a single step.

Command Code	Parameters	Function	Possible Response
SHD	SDI SDP 720P 1080I 1080P SRC AUTO	Set HDMI output resolution. SDI – Standard definition interlaced (480i/576i) SDP – Standard definition progressive (480p/576p) SRC – Source Direct	OK 480P (OK followed by the original parameter)
SPN	NTSC PAL AUTO	Set output TV system	OK NTSC OK PAL OK AUTO
SZM	1 AR FS US 1.2 1.3 1.5 2 1/2 3 4 1/3 1/4	Set zoom ratio. AR – Aspect ratio correction (Stretch, Letterbox or Pillarbox) FS - Full Screen US - Underscan For HDMI Output: 1, AR, FS, US, 1.2, 1.3, 1.5, 2, 1/2; For Component Ouput: 1, 2, 3, 4, 1/2, 1/3, 1/4)	OK 1.2 (OK followed by the original parameter)
SVL	0 – 100 MUTE	Set volume control	OK 100 OK MUTE
SRP	CH TT ALL OFF SHF RND	Repeat chapter Repeat title Repeat all Repeat off Shuffle Random	OK CH (OK followed by the original parameter) ER INVALID
SRH	T3 C10 C 0:00:34 T 0:12:13 0:12:13	Search to Title 3 Search to Chapter 10 Search to 0:00:34 of the current chapter or track Search to 0:12:13 of the current title or disc Search to 0:12:13 of the current title or disc	OK ER INVALID
DPL		Direct play	OK
RST		Reset RS232 Command – Clean all command buffers, do not wait for any pending/executing commands. Start over again.	OK

Example:

The following is an example of a command and response sequence. The comments are placed after the semicolon.

```
#PON                          ; Turn on power
@OK ON                        ; Player is turned on
#QPW                          ; Check power status
@OK OFF                       ; Player is still doing power-on initialization
(Wait for a while)
#QPW                          ; Check power status
@OK ON                        ; Player is powered on and ready
#EJT                          ; Eject the tray
@OK OPEN                      ; Tray opens
(Place a disc on the tray)
#PLA                          ; Start playback
@OK PLAY                      ; You may get "ER OVERTIME" message due to the
                              ; mechanical delay. This is normal
#QDT                          ; Check disc type
@OK LOADING                   ; Player is still loading
(Wait for a while)
#QDT                          ; Check disc type again
@OK BD-MV                     : Disc is a Blu-ray disc.
#QPL                          ; Check playback status
@OK PLAY                      : Playback is in progress
(Watch the movie)
#STP                          ; Stop playback
@OK STOP                      : Playback has stopped
#EJT                          ; Eject the tray
@OK OPEN                      ; Tray opens
(Take out the disc)
#POF                          ; Turn off power
@OK OFF                       ; The player turns off
```